Permit Fact Sheet

General Information

Permit Number:	WI-0025411-10-0	
Permittee Name:	City of Sheboygan	
Address:	3333 Lakeshore Drive	
City/State/Zip:	Sheboygan, WI 53081-6961	
Discharge Location:	Western shore of Lake Michigan approximately 9,300 feet south of the mouth of the Sheboygan River and extending 1,570 feet east into Lake Michigan. (Lat: 43.71924°N Long: -87.70137° W)	
Receiving Water:	Lake Michigan in Sheboygan County	
StreamFlow ($Q_{7,10}$):	A 10:1 dilution factor is applicable for a direct discharge to Lake Michigan.	
Stream Classification:	Cold water fishery, public water supply	
Design Flow(s)	Daily Maximum	56.8 MGD
	Weekly Maximum	35.4 MGD
	Monthly Maximum	23.2 MGD
	Annual Average	18.4 MGD
Significant Industrial Loading?	Yes, Sheboygan accepts waste from Gibbsville Cheese, Old Wisconsin Sausage, 3 Sheeps Brewery, Old World Creamery, Millipore Sigma, and Rockline Industries,	
Operator at Proper Grade?	Yes. Plant Classification is: Advanced – A1, B, C, P & D and Basic - SS	
Approved Pretreatment Program?	Yes.	

Facility Description

The City of Sheboygan operates a conventional activated sludge wastewater treatment facility with an 18.39 MGD annual average design flow that serves a population of approximately 70,000 people from the City of Sheboygan, Village of Kohler, Town of Wilson, Town of Sheboygan, City of Sheboygan Falls, and 15 categorical industrial contributors. Raw wastewater enters the plant and passes through fine screens and a Pista grit removal system before flowing to four primary clarifiers. Screenings material and grit are hauled to a licensed landfill. From the clarifiers, supernatant is sent to two basins for Biological Phosphorus Removal. Further phosphorus removal is accomplished with ferric chloride if needed. Treatment is continued in four aeration basins followed by four final clarifiers. Wastewater is then disinfected with sodium hypochlorite in the contact chamber and de-chlorinated with sodium bisulfite before discharge to Lake Michigan. Sludge is anaerobically digested in three digesters and dewatered using a gravity belt thickener and screw press. Dewatered sludge is then dried to produce a Class A, exceptional quality "EQ" product. The City of Sheboygan uses a third-party contractor to properly transport, store, and distribute the EQ biosolids with the exception of those retained by the City of Sheboygan. If needed, Class B liquid biosolids may be land applied onto Department-approved agricultural fields with prior Department approval. The Department has found the facility to be in substantial compliance with the current permit.

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, WasteType/sample Contents and Treatment Description (as applicable)**
701	Flow 11.47 MGD; $CBOD_5$ 138 mg/L; TSS 205 mg/L (All January 2016 through April 2020 avg)	INFLUENT: 24-hour flow proportional samples shall be collected from the raw influent pump header before screening and grit removal. Flow is measured in the primary effluent channel to aeration basins.
001	$CBOD_5$ 1.98 mg/L; TSS 3.46 mg/L (All January 2016 through April 2020 avg)	EFFLUENT: 24-hour flow proportional composite samples and grab samples shall be collected from the outfall basin after chlorination and dechlorination.
002	N/A	OUTFALL INACTIVE: Class B, anaerobically digested liquid sludge. Representative sludge samples shall be taken from the biosolids storage tank draw-off pipe prior to land application. (PLACEHOLDER) Department approval to activate Outfall 002 must be received prior to use.
004	1,448 dry U.S. tons generated annually (per 2020 permit application)	Class A, anaerobically digested, screw press thickened and dried, Exceptional Quality (EQ) sludge. Pathogen samples shall be collected from the sludge dryer discharger.
005	New Sample Point	Class A, anaerobically digested, screw press thickened and dried, Exceptional Quality (EQ) sludge. Representative samples shall be collected from the dried biosolids storage silo.
107	N/A	FIELD BLANK: Sample point for reporting results of mercury field blanks shall be collected using standard sample handling procedures.
108	New Sample Point	Monitor Arsenic in the City Water Intake (Water supply from Lake Michigan)

1 Influent - Proposed Monitoring

1.1 Sample Point Number: 701- INFLUENT TO PLANT

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
$CBOD_5$		mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	3/Week	24-Hr Flow Prop Comp	
Cadmium, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Comp	See 'Total Metals Analyses' and 'Sample Analysis' subsections in permit.
Chromium, Total		ug/L	Monthly	24-Hr Flow	See 'Total Metals Analyses'

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Recoverable				Prop Comp	and 'Sample Analysis' subsections in permit.
Copper, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Comp	See 'Total Metals Analyses' and 'Sample Analysis' subsections in permit.
Lead, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Comp	See 'Total Metals Analyses' and 'Sample Analysis' subsections in permit.
Nickel, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Comp	See 'Total Metals Analyses' and 'Sample Analysis' subsections in permit.
Zinc, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Comp	See 'Total Metals Analyses' and 'Sample Analysis' subsections in permit.
Mercury, Total Recoverable		ng/L	Monthly	24-Hr Flow Prop Comp	See "Mercury Monitoring' subsection in permit.

1.1.1 Changes from Previous Permit

Flow Rate: Sample frequency was changed from “Continuous” to “Daily”.

1.1.2 Explanation of Limits and Monitoring Requirements

Flow Rate: Flow rate sample frequency was changed from “Continuous” to “Daily to achieve eDMR reporting consistency.

$CBOD_5$ and Total Suspended Solids: Tracking of $CBOD_5$ and Total Suspended Solids are required for percent removal requirements found in s. NR 210.05, Wis. Adm. Code and in the ‘Standard Requirements’ section of the permit. 3x/week influent monitoring for $CBOD_5$ and Total Suspended Solids is continued in the proposed permit. Evaluation of past data including effluent performance, influent flows and loading, and compliance history do not support an increase in monitoring frequency. Effluent concentrations are consistently below permit limits, flows and loads do not fluctuate significantly, and the facility has remained compliant with all permit limits and conditions. In addition, there have been no occurrences of bypass, blending, or Technology Facility Overflows.

Cadmium, Chromium, Copper, Lead, Nickel, and Zinc: Sheboygan is a control authority subject to state and federal pretreatment requirements, therefore, the proposed permit continues monitoring of influent for Cadmium, Chromium, Copper, Lead, Nickel, and Zinc as part of the pretreatment program.

Mercury Monitoring: Mercury monitoring is included in the proposed permit pursuant to s. NR 106.145, Wis. Adm. Code. Required field blanks for Mercury monitoring are included per ss. NR 106.145 (9) and (10), Wis. Adm. Code, requirements. The permittee shall collect a mercury field blank for each set of mercury samples (a set of samples may include a combination of influent, effluent or other samples all collected on the same day). The permittee shall report results of influent and effluent samples and field blanks to the Department on Discharge Monitoring Reports.

2 Inplant - Proposed Monitoring and Limitations

2.1 Sample Point Number: 107- Mercury field blank

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Mercury, Total Recoverable		ng/L	Monthly	Blank	See 'Mercury Monitoring' subsection in permit.

2.1.1 Changes from Previous Permit:

No changes from previous permit.

2.1.2 Explanation of Limits and Monitoring Requirements

Mercury Monitoring: Mercury monitoring is included in the proposed permit pursuant to s. NR 106.145, Wis. Adm. Code. Required field blanks for Mercury monitoring are included per ss. NR 106.145 (9) and (10), Wis. Adm. Code, requirements. The permittee shall collect a mercury field blank for each set of mercury samples (a set of samples may include a combination of influent, effluent or other samples all collected on the same day). The permittee shall report results of influent and effluent samples and field blanks to the Department on Discharge Monitoring Reports.

2.2 Sample Point Number: 108 - City Water Intake

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Arsenic, Total Recoverable		ug/L	Quarterly	Grab	See 'Total Metals Analyses' and 'Sample Analysis' subsection in permit.

2.2.1 Changes from Previous Permit:

Quarterly monitoring of Total Recoverable Arsenic was added to the proposed permit.

2.2.2 Explanation of Limits and Monitoring Requirements

Arsenic, Total Recoverable: A strong correlation between background data and facility effluent data suggests that effluent discharge concentrations of arsenic are due to the presence of arsenic in source water. Due to a limited amount of data, untreated drinking water intake and effluent monitoring for total recoverable arsenic is included. A separate sample point for drinking water intake is included to allow for data reporting and retrieval. Pursuant to s. NR 106.07(6)(a), Wis. Adm. Code, the permittee shall perform effluent monitoring required in the permit using an acceptable analytical methodology for total recoverable arsenic in ch. NR 219, Wis. Adm. Code, which produces the lowest limit of detection and limit of quantification possible.

Data will be used to illustrate the local arsenic cycle and determine if condition of s. NR 106.06(6) (b) 1-5, Wis. Adm. Code, are met. Monitoring will occur quarterly to provide enough information by the next permit reissuance to determine if continued monitoring and/or a water quality-based effluent limit is necessary for total recoverable arsenic. Arsenic samples shall be analyzed using a highly sensitive but acceptable method unless not possible, using the most sensitive approved method.

3 Surface Water - Proposed Monitoring and Limitations

3.1 Sample Point Number: 001- EFFLUENT

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
$CBOD_5$	Weekly Avg	40 mg/L	3/Week	24-Hr Flow Prop Comp	
$CBOD_5$	Monthly Avg	25 mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	45 mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	30 mg/L	3/Week	24-Hr Flow Prop Comp	
pH Field	Daily Min	6.0 su	Daily	Grab	
pH Field	Daily Max	9.0 su	Daily	Grab	
Nitrogen, Ammonia (NH3-N) Total	Daily Max	23 mg/L	Daily	24-Hr Flow Prop Comp	Limit effective November-April.
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	23 mg/L	Daily	24-Hr Flow Prop Comp	Limit effective November-April.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	23 mg/L	Daily	24-Hr Flow Prop Comp	Limit effective November-April.
Nitrogen, Ammonia (NH3-N) Total		mg/L	Weekly	24-Hr Flow Prop Comp	Monitoring only May-October.
Fecal Coliform	Geometric Mean-Monthly	400 #/100 ml	Weekly	Grab	Limit effective October through April annually. Effective as interim limit May through September annually until the E. coli limit goes into effect per the Effluent Limitations for E. coli Schedule.
E. coli		#/100 ml	Weekly	Grab	Monitoring only May through September annually until the final limit goes into effect per the Effluent Limitations for E. coli Schedule.
E. coli	Geometric Mean - Monthly	126 #/100 ml	Weekly	Grab	Limit effective May through September annually per the Effluent Limitations for E. coli

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					Schedule.
E. coli	% Exceedance	10 Percent	Monthly	Calculated	Limit effective May through September annually per the Effluent Limitations for E. coli Schedule. See the 'E. coli Percent Limit' subsection below. Enter the result in the DMR on the last day of the month.
Chlorine, Total Residual	Daily Max	38 ug/L	Daily	Grab	Limit effective year-round and whenever chlorinating.
Chlorine, Total Residual	Weekly Avg	38 ug/L	Daily	Grab	Limit effective year-round and whenever chlorinating.
Chlorine, Total Residual	Monthly Avg	38 ug/L	Daily	Grab	Limit effective year-round and whenever chlorinating.
Phosphorus, Total	Monthly Avg	0.9 mg/L	Daily	24-Hr Flow Prop Comp	This is an interim limit. See the 'Phosphorus' subsection in permit.
Phosphorus, Total	6-Month Avg	0.6 mg/L	Daily	24-Hr Flow Prop Comp	See the 'Phosphorus' subsection in permit.
Nitrogen, Total Kjeldahl		mg/L	Quarterly	24-Hr Flow Prop Comp	
Nitrogen, Nitrite + Nitrate Total		mg/L	Quarterly	24-Hr Flow Prop Comp	
Nitrogen, Total		mg/L	Quarterly	Calculated	Total Nitrogen shall be calculated as the sum of reported values for Total Kjeldahl Nitrogen and Total Nitrite + Nitrate Nitrogen.
Acute WET		TUa	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annual in rotating quarters. See 'WET Testing' subsection in permit.
Chronic WET	Monthly Avg	11 TUc	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annual in rotating quarters. See 'WET Testing' subsection in permit.
Cadmium, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Comp	See 'Total Metals Analyses' and 'Sample Analysis' subsections in permit.

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Chromium, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Comp	See 'Total Metals Analyses' and 'Sample Analysis' subsections in permit.
Copper, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Comp	See 'Total Metals Analyses' and 'Sample Analysis' subsections in permit.
Lead, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Comp	See 'Total Metals Analyses' and 'Sample Analysis' subsections in permit.
Nickel, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Comp	See 'Total Metals Analyses' and 'Sample Analysis' subsections in permit.
Zinc, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Comp	See 'Total Metals Analyses' and 'Sample Analysis' subsections in permit.
Mercury, Total Recoverable		ng/L	Monthly	Grab	See 'Mercury Monitoring' subsection in permit.
Arsenic, Total Recoverable		ug/L	Quarterly	Grab	See 'Total Metals Analyses' and 'Sample Analysis' subsections in permit.

3.1.1 Changes from Previous Permit

Total Ammonia Nitrogen: A weekly average limit of 23 mg/L and a monthly average limit of 23 mg/L was added to the proposed permit.

Fecal Coliform and E. coli: Fecal coliform monitoring and limits have been replaced with Escherichia coli (E. coli) monitoring and limits. E. coli monitoring is required at the permit effective date. An interim fecal coliform limit of 400 #/100 ml as a monthly geometric mean will apply from the permit effective date through the end of a schedule. At the end of the schedule, E. coli limits of 126 #/100 ml as a monthly geometric mean that may never be exceeded and 410 #/100ml as a daily maximum that may not be exceeded more than 10 percent of the time in any calendar month will apply.

Total Residual Chlorine: A weekly average limit of 38 ug/L and a monthly average limit of 38 ug/L were added to the proposed permit.

Total Phosphorus: A six-month average limit of 0.6 mg/L was added to the proposed permit.

Total Nitrogen Monitoring (TKN, N02 + N03 and Total N): Quarterly monitoring was added to the proposed permit.

Whole Effluent Toxicity: A chronic monthly average WET limit of 11 TUc was added to the proposed permit.

Total Recoverable Mercury: The daily maximum limit of 2.8 ng/L was removed from the proposed permit. Year-round monthly monitoring is still required.

3.1.2 Explanation of Limits and Monitoring Requirements

Categorical Limits

- **Total $CBOD_5$, Total Suspended Solids, and pH:** Tracking of $CBOD_5$ and Total Suspended Solids are required for percent removal requirements found in s. NR 210.05, Wis. Adm. Code and in the 'Standard Requirements' section of the permit. 3x/week influent monitoring for $CBOD_5$ and Total Suspended Solids is continued in the proposed permit. Evaluation of past data including effluent performance, influent flows and loading, and compliance history do not support an increase in monitoring frequency. Effluent concentrations are consistently below permit limits, flows and loads do not fluctuate significantly, and the facility has remained compliant with all permit limits and conditions. In addition, there have been no occurrences of bypass, blending, or Technology Facility Overflows.

Water Quality Based Limits, WET Requirements, and Disinfection

Refer to the "Water Quality-Based Effluent Limitations for the Sheboygan Wastewater Treatment Plant", prepared by Nicole Krueger, dated October 7, 2020 and used for this reissuance.

- **Total Ammonia Nitrogen:** Current acute and chronic ammonia toxicity criteria for the protection of aquatic life are included in Table 2C and Table 4B of ch. NR 105, Wis. Adm. Code (effective March 1, 2004). Subchapter IV of ch. NR 106 establishes procedures for calculating water quality-based effluent limitations (WQBELs) for ammonia (effective March 1, 2004).

  Regulatory changes to s. NR 205.065, Wis. Adm. Code, became effective September 1, 2016 and require limits in this permit to be expressed as weekly average and monthly average limits whenever practicable. Therefore, a weekly average limit of 23 mg/L (November-April), and a monthly average limit of 23 mg/L (November-April), were added to the proposed permit. Weekly monitoring is required during the months of May through October.

- **E. coli:** Revisions to bacteria surface water quality criteria to protect recreational uses and accompanying E. coli WPDES permit implementation procedures became effective May 1, 2020. The new rule requires that WPDES permits for facilities with required disinfection include monitoring for E. coli while facilities are disinfecting during the recreation period and establish effluent limitations for E. coli established in s. NR 210.06 (2), Wis. Adm. Code. The administrative code rule changes included the following actions: revised the bacteria water quality criteria from fecal coliform to E. coli to protect recreation in ch. NR 102, Wis. Adm. Code; removed fecal coliform criteria for certain individual waters from ch. NR 104, Wis. Adm. Code; revised permit requirements for publicly and privately owned sewage treatment works in ch. NR 210, Wis. Adm. Code; and updated approved analytical methods for bacteria in ch. NR 219, Wis. Adm. Code.

- **Total Residual Chlorine:** Because chlorine is added as a disinfectant during blending events, effluent limitations are recommended to assure proper operation of the de-chlorination system. Due to revisions to s. NR 106.07(2), Wis. Adm. Code, mass limitations are no longer required. Weekly and monthly concentration limits of 38 ug/L were added to meet the expression of limits requirements in s. NR 106.07, Wis. Adm. Code.

- **Total Phosphorus:** Phosphorus requirements are based on the phosphorus rules that became effective December 1, 2010, as detailed in NR 102 Water Quality Standards and NR 217 Effluent Standards and Limitations for Phosphorus. Chapter NR 217, Wis. Adm. Code, requires municipal wastewater treatment facilities that discharge greater than 150 pounds of Total Phosphorus per month to comply with a monthly average limit of 1.0 mg/L, or an approved alternative concentration limit. Because Sheboygan currently has a limit of 0.9 mg/L, this limit is continued in the proposed permit.

  Chapter NR 217, Wis. Adm. Code, also specifies WQBELs (water quality based effluent limits) for discharges of phosphorus to surface waters of the state from publicly and privately-owned wastewater facilities, noncontact cooling water discharges which contain phosphorus, concentrated animal feeding operations that discharge through alternative treatment facilities and a facility/site that is regulated under ch. NR 216, Wis. Adm. Code where the standards in chs. NR 151 and NR 216, Wis. Adm. Code are not sufficient to meet phosphorus criteria. WQBELs for phosphorus are needed whenever the discharge contains phosphorus at concentrations or loadings that will cause or contribute to an exceedance of the water quality standards. Section NR 102.06(5)(b), Wis. Adm. Code, specifies a total phosphorus criterion of 7 µg/L (0.007 mg/L) for the open and near shore waters of Lake Michigan. For discharges directly to the Great Lakes, s. NR 217.13(4), Wis. Adm. Code, states that the

Department shall set effluent limits consistent with near shore or whole lake models approved by the Department. At this time, there is no model available. According to phosphorus implementation guidance, an interim limit should be set at a level that is achievable and makes progress toward phosphorus reductions without the investment of temporary treatment or a schedule to meet the interim limit. Effluent data from April 2017 to April 2020 demonstrates that the facility is able to meet 0.6 mg/L as a six-month average on a consistent basis. Therefore, a six-month average limit of 0.6 mg/L is also included in the proposed permit. The permittee shall continue to reduce phosphorus as much as practical from their discharge and continue to minimize phosphorus in their discharge.

- **Total Nitrogen Monitoring (NO2+NO3, TKN and Total N):** The Department has included effluent monitoring for Total Nitrogen in the permit through the authority under s. 283.55(1)(e), Wis. Stats., which allows the department to require the permittee to submit information necessary to identify the type and quantity of any pollutants discharged from the point source, and through s. NR 200.065(1)(h), Wis. Adm. Code, which allows for this monitoring to be collected during the permit term. Quarterly effluent monitoring for Total Nitrogen is included in the permit because of the potential for higher nitrogen loading resulting from higher flows (major facilities), higher concentrations, or both. More information on the justification to include total nitrogen monitoring in wastewater permits can be found in the "Guidance for Total Nitrogen Monitoring in Wastewater Permits" dated October 1, 2019.
- **Whole Effluent Toxicity:** Whole effluent toxicity (WET) testing requirements are determined in accordance with ss. NR 106.08 and NR 106.09, Wis. Adm. Code, as revised August 2016. (See the current version of the Whole Effluent Toxicity Program Guidance Document and checklist and WET information, guidance and test methods at http://dnr.wi.gov/topic/wastewater/wet.html). Based on data collected from March 2006 to October 2019, no reasonable potential for acute whole effluent toxicity is shown, and therefore a limit is not required. According to requirements specified in s. NR 106.08. Wis. Adm. Code, and because reasonable potential for chronic toxicity exists, a chronic WET limit of 11 TUc is included in the proposed permit. Chronic WET tests are scheduled in the following quarters: July-September 2021, January-March 2022, October-December 2023, April-June 2024, July-September 2025
- **Cadmium, Chromium, Copper, Lead, Nickel, and Zinc:** The City of Sheboygan is a control authority subject to state and federal pretreatment requirements. Therefore, the proposed permit continues monitoring of effluent for Cadmium, Chromium, Copper, Lead, Nickel, and Zinc. Effluent limits are not required, as the 1-day P_{99} and 4-day P_{99} for all corresponding daily maximum and weekly average limits are less than the calculated limits. Monthly monitoring is continued in the proposed permit.
- **Total Recoverable Mercury:** The previous permit for Sheboygan includes a 2.8 ng/L daily maximum mercury limit; however, representative data shows there is no reasonable potential for Sheboygan to exceed the calculated water quality-based effluent limit. Therefore, no mercury limit is recommended in the proposed permit. Monthly mercury monitoring is included in the proposed permit. Requirements for mercury are included in s. NR 106.145, Wis. Adm. Code (effective November 2002).
- **Total Recoverable Arsenic:** A strong correlation between background data and facility effluent data suggests that effluent discharge concentrations of arsenic are due to the presence of arsenic in source water. Due to a limited amount of data, untreated drinking water intake and effluent monitoring for total recoverable arsenic is included. A separate sample point for drinking water intake is included to allow for data reporting and retrieval. Pursuant to s. NR 106.07(6)(a), Wis. Adm. Code, the permittee shall perform effluent monitoring required in the permit using an acceptable analytical methodology for total recoverable arsenic in ch. NR 219, Wis. Adm. Code, which produces the lowest limit of detection and limit of quantification possible.

  Data will be used to illustrate the local arsenic cycle and determine if condition of s. NR 106.06(6) (b) 1-5, Wis. Adm. Code, are met. Monitoring will occur quarterly to provide enough information by the next permit reissuance to determine if continued monitoring and/or a water quality-based effluent limit is necessary for total recoverable

arsenic. Arsenic samples shall be analyzed using a highly sensitive but acceptable method unless not possible, using the most sensitive approved method.

4 Land Application - Proposed Monitoring and Limitations

Municipal Sludge Description						
Sample Point	**Sludge Class (A or B)**	**Sludge Type (Liquid or Cake)**	**Pathogen Reduction Method**	**Vector Attraction Method**	**Reuse Option**	**Amount Reused/Disposed (Dry Tons/Year)**
002	B	Liquid	Anaerobic Digestion	Injection	Land Application	N/A
004	A	Cake	Fecal Coliform	Drying with Stabilized Solids	Land Application and Distribution of EQ Biosolids	N/A
005	A	Cake	Fecal Coliform	Drying with Stabilized Solids	Land Application and Distribution of EQ Biosolids	1,443 dry U.S. tons (per 2020 permit application)
Does sludge management demonstrate compliance? **Yes**						
Is additional sludge storage required? **No**						
Is Radium-226 present in the water supply at a level greater than 2 pCi/liter? **No**						
Is a priority pollutant scan required? **No. A priority pollutant scan was conducted during the previous permit term.** Priority pollutant scans are required once every 10 years at facilities with design flows between 5 MGD and 40 MGD, and once every 5 years if design flow is greater than 40 MGD.						

4.1.1 Sample Point Number 002 – LIQUID ANAEROBIC SLUDGE (INACTIVE)

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	1/ 2 Months	Composite	
Arsenic Dry Wt	Ceiling	75 mg/kg	1/ 2 Months	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	1/ 2 Months	Composite	
Cadmium Dry Wt	Ceiling	85 mg/kg	1/ 2 Months	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	1/ 2 Months	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	1/ 2 Months	Composite	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Copper Dry Wt	High Quality	1,500 mg/kg	1/ 2 Months	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	1/ 2 Months	Composite	
Lead Dry Wt	High Quality	300 mg/kg	1/ 2 Months	Composite	
Mercury Dry Wt	Ceiling	57 mg/kg	1/ 2 Months	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	1/ 2 Months	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	1/ 2 Months	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	1/ 2 Months	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	1/ 2 Months	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	1/ 2 Months	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	1/ 2 Months	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	1/ 2 Months	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	1/ 2 Months	Composite	
Nitrogen, Total Kjeldahl		Percent	1/ 2 Months	Composite	
Nitrogen, Ammonium (NH4-N) Total		Percent	1/ 2 Months	Composite	
Phosphorus, Total		Percent	1/ 2 Months	Composite	
Phosphorus, Water Extractable		% of Tot P	1/ 2 Months	Composite	
Potassium, Total Recoverable		Percent	1/ 2 Months	Composite	
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	Sample once in 2022, if not monitored previously during the permit term.
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	Sample once in 2022, if not sampled previously during the permit term.

4.1.2 Changes from Previous Permit:

Outfall 002 was designated as inactive in the proposed permit as a placeholder should the need for liquid sludge application arise.

4.1.3 Explanation of Limits and Monitoring Requirements

Requirements for land application of municipal sludge are determined in accordance with ch. NR 204, Wis. Adm. Code. Ceiling and high-quality limits for metals in sludge are specified in s. NR 204.07(5), Wis. Adm. Code. Requirements for

pathogens are specified in s. NR 204.07(6), and in s. NR 204.07(7), Wis. Adm. Code, for vector attraction requirements. Limitations for PCBs are addressed in s. NR 204.07(3)(k), Wis. Adm. Code.

Outfall 002 will be inactivated upon permit reissuance and requires prior Department approval. If the permittee does not use Outfall 002, PCB monitoring is not required for Outfall 002. PCB testing results from Outfall 005 may be applied to Outfall 002, if needed.

4.2 Sample Point Number: 004- EQ Dried Sludge – Dryer

Pursuant to s. NR 204.07(6)(a), Wis. Adm. Code, the permittee shall meet one of the requirements of 1) Class A pathogen of indicator densities requirements and 2) Class A pathogen treatment processes. The permittee shall monitor the treatment process for compliance with pathogen or indicator density requirements immediately after the treatment process. The Fecal Coliform limitations is 1000 MPN/g total solids.

Pursuant to s. NR 204.07 (6)(a), Class A requirements shall be met prior to or at the time of meeting vector attraction reduction requirements specified in s. NR 204.07(7), Wis. Adm. Code.

4.2.1 Changes from Previous Permit

Sample Point 004 was added to clarify sampling location and requirements needed to comply with Class A treatment process monitoring.

4.2.2 Explanation of Limits and Monitoring Requirements

Requirements for municipal sludge are determined in accordance with ch. NR 204 Wis. Adm. Code. Requirements for pathogens are specified in s. NR 204.07(6) and in s. NR 204.07 (7), Wis. Adm. Code, for vector attraction requirements. The limits and monitoring requirements for Sample Point 004 are included in accordance with both state and federal requirements for pathogen and vector attraction.

4.3 Sample Point Number: 005- EQ Dried Sludge – Silo

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	1/ 2 Months	Grab	
Arsenic Dry Wt	Ceiling	75 mg/kg	1/ 2 Months	Grab	
Arsenic Dry Wt	High Quality	41 mg/kg	1/ 2 Months	Grab	
Cadmium Dry Wt	Ceiling	85 mg/kg	1/ 2 Months	Grab	
Cadmium Dry Wt	High Quality	39 mg/kg	1/ 2 Months	Grab	
Copper Dry Wt	Ceiling	4,300 mg/kg	1/ 2 Months	Grab	
Copper Dry Wt	High Quality	1,500 mg/kg	1/ 2 Months	Grab	
Lead Dry Wt	Ceiling	840 mg/kg	1/ 2 Months	Grab	
Lead Dry Wt	High Quality	300 mg/kg	1/ 2 Months	Grab	
Mercury Dry Wt	Ceiling	57 mg/kg	1/ 2 Months	Grab	
Mercury Dry Wt	High Quality	17 mg/kg	1/ 2 Months	Grab	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Molybdenum Dry Wt	Ceiling	75 mg/kg	1/ 2 Months	Grab	
Nickel Dry Wt	Ceiling	420 mg/kg	1/ 2 Months	Grab	
Nickel Dry Wt	High Quality	420 mg/kg	1/ 2 Months	Grab	
Selenium Dry Wt	Ceiling	100 mg/kg	1/ 2 Months	Grab	
Selenium Dry Wt	High Quality	100 mg/kg	1/ 2 Months	Grab	
Zinc Dry Wt	Ceiling	7,500 mg/kg	1/ 2 Months	Grab	
Zinc Dry Wt	High Quality	2,800 mg/kg	1/ 2 Months	Grab	
Nitrogen, Total Kjeldahl		Percent	1/ 2 Months	Grab	
Nitrogen, Ammonium (NH4-N) Total		Percent	1/ 2 Months	Grab	
Phosphorus, Total		Percent	1/ 2 Months	Grab	
Phosphorus, Water Extractable		% of Tot P	1/ 2 Months	Grab	
Potassium, Total Recoverable		Percent	1/ 2 Months	Grab	
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Grab	Sample once in 2022.
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Grab	Sample once in 2022.

4.3.1 Changes from Previous Permit:

Sample point 005 and the associated limits and monitoring requirements were added to the proposed permit.

4.3.2 Explanation of Limits and Monitoring Requirements

Requirements for municipal sludge are determined in accordance with ch. NR 204 Wis. Adm. Code. Requirements for pathogens are specified in s. NR 204.07(6) and in s. NR 204.07 (7), Wis. Adm. Code, for vector attraction requirements. The limits and monitoring requirements for Sample Point 005 are included in accordance with both state and federal requirements for pathogen and vector attraction.

5 Schedules

5.1 Phosphorus Schedule - Optimization Plan

No later than 14 days following each compliance date, the permittee shall notify the Department in writing of its compliance or noncompliance with the required action. If a submittal is part of the required action, then a timely submittal fulfills the written notification requirement.

Required Action	Due Date

Optimization Summary Report: The permittee shall continue to implement phosphorus optimization efforts throughout the permit term and identify any new optimization efforts. The permittee shall submit a final report documenting successes in reducing phosphorus concentrations in the effluent. The report shall summarize the actions taken for continued optimization of phosphorus removal. The report shall also include an analysis of trends in monthly and annual total effluent phosphorus concentrations based on sampling during the current permit term and include an evaluation of collected effluent data. The final report shall also identify any possible source reduction measures and operational improvements to continue to optimize removal of phosphorus in the future.	09/30/2025

5.1.1 Explanation of Schedule

The 0.9 mg/L monthly average interim limit and 0.6 mg/L 6-month average limit for phosphorus requires the permittee to optimize removal of phosphorus in the effluent. The interim limits are the Department's strategy for addressing the pending development of the near shore or whole lake model for direct discharges to Lake Michigan. The schedule requires that the permittee prepare an optimization summary report that shall include an evaluation of collected effluent data, possible source reduction measures and operational improvements to optimize removal of phosphorus.

5.2 Effluent Limitations for E. coli

The permittee shall comply with surface water limitations for E. coli as specified. No later than 14 days following each compliance date, the permittee shall notify the Department in writing of its compliance or noncompliance. If a submittal is required, a timely submittal fulfills the notification

Required Action	Due Date
Status Update: The permittee shall submit information within the discharge monitoring report (DMR) comment section documenting the steps taken in preparation for properly monitoring and testing for E. coli including, but not limited to, selected test method and location of sampling.	05/21/2021
Operational Evaluation Report: The permittee shall prepare and submit an Operational Evaluation Report to the Department for review and approval. The report shall include an evaluation of collected effluent data and proposed operational improvements that will optimize efficacy of disinfection at the treatment plant during the period prior to complying with final E. coli limitations and, to the extent possible, enable compliance with the final E. coli limitations. The report shall include a plan and schedule for implementation of the operational improvements. These improvements shall occur as soon as possible, but not later than March 31, 2022. The report shall state whether the operational improvements are expected to result in compliance with the final E. coli limitations. The permittee shall implement the operational improvements in accordance with the approved plan and schedule specified in the Operational Evaluation Report and in no case later than December 31, 2021. If the Operational Evaluation Report concludes that the operational improvements are expected to result in compliance with the final E. coli limitations, the permittee shall comply with the final E. coli limitations by March 31, 2022 and the permittee is not required to comply with subsequent milestones identified below in this compliance schedule ('Submit Facility Plan', 'Final Plans and Specifications', 'Treatment Plant Upgrade to Meet Limitations', 'Construction Upgrade Progress Report', 'Complete Construction', 'Achieve Compliance'). FACILITY PLAN - If the Operational Evaluation Report concludes that operational improvements alone are not expected to result in compliance with the final E. coli limitations, the permittee shall initiate development of a facility plan for meeting final E. coli limitations and comply with the remaining required actions in this schedule of compliance. If the Department disagrees with the conclusion of the report, and determines that the permittee can achieve final E. coli limitations using the existing treatment system with only operational improvements,	09/30/2021

the Department may reopen and modify the permit to include an implementation schedule for achieving the final E. coli limitations sooner than April 30, 2025.	
Submit Facility Plan: If the Operational Evaluation Report concluded that the permittee cannot achieve final E. coli limitations with operational improvements alone, the permittee shall submit a Facility Plan per s. NR 110.09, Wis. Adm. Code. The permittee may submit an abbreviated facility plan if the Department determines that the modifications are minor.	03/31/2022
Final Plans and Specifications: The permittee shall submit final construction plans to the Department for approval pursuant to ch. NR 108, Wis. Adm. Code, specifying treatment plant upgrades that must be constructed to achieve compliance with final E. coli limitations and a schedule for completing construction of the upgrades by the complete construction date specified below.	03/31/2023
Treatment Plant Upgrade to Meet Limitations: The permittee shall initiate bidding, procurement, and/or construction of the project. The permittee shall obtain approval of the final construction plans and schedule from the Department pursuant to s. 281.41. Stats., prior to initiating activities defined as construction under ch. NR 108, Wis. Adm. Code. Upon approval of the final construction plans and schedule by the Department pursuant to s. 281.41, Stats., the permittee shall construct the treatment plant upgrades in accordance with the approved plans and specifications.	09/30/2023
Construction Upgrade Progress Report: The permittee shall submit a progress report on construction upgrades.	09/30/2024
Complete Construction: The permittee shall complete construction of wastewater treatment system upgrades.	03/31/2025
Achieve Compliance: The permittee shall achieve compliance with final E. coli limitations.	04/30/2025

5.2.1 Explanation of Schedule

A schedule is included in the permit to provide time for the permittee to investigate options for meeting new effluent E. coli water quality-based effluent limits while coming into compliance with the limits as soon as reasonably possible.

Attachments:

Substantial Compliance Determination, dated August 21, 2020 and prepared by Curt Nickels.

Water Quality-Based Effluent Limitations for the Sheboygan Wastewater Treatment Plant, dated October 7, 2020 and prepared by Nicole Krueger.

Proposed Expiration Date:

March 31, 2026

Justification Of Any Waivers From Permit Application Requirements

No waivers were given from permit application requirements.

Prepared By:

Lisa Creegan, Wastewater Specialist

Date: December 15, 2020

Date (post-fact check): January 12, 2021

Date (post public notice):